

F1G. 1

F16 (

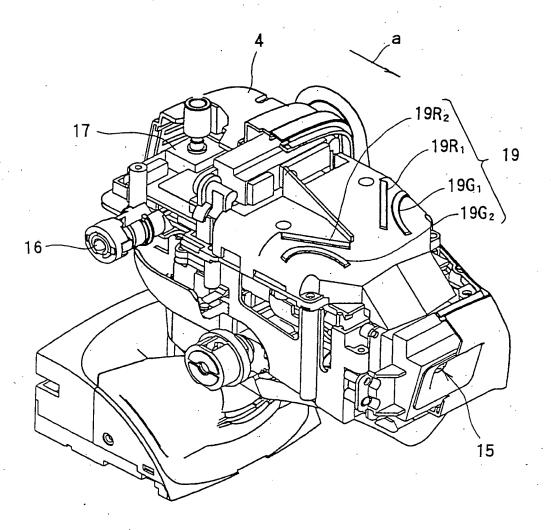


FIG. 3

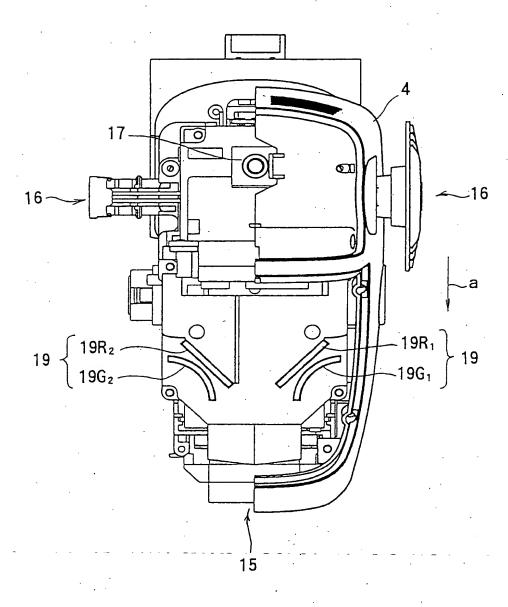
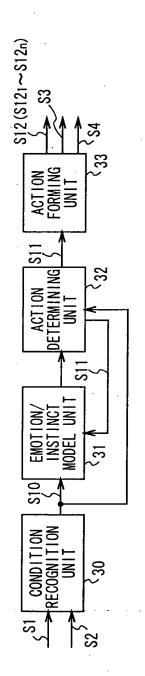


FIG. 4







F16.





TOWARD SADNESS: AN EMOTIONAL ACTION THAT OCCURS WHEN THE INFORMATION ENTERED IS NOT FAVORABLE, OR THE ROBOT IS EXPECTING THE INFORMATION THAT HAS NOT BEEN ENTERED AND THE ROBOT HAS NO HOSTILITY TOWAFTHE OUTSIDE. ENTERING THE RESOLVING ACTION AT THE TIME THE DESIRE OF THE INSTINCT MODEL IS STRONG. IT FINDS ITS FAVORITE COLOR. IT IS PATTED. TO EXPRESS THE INFORMATION

O AN EMOTIONAL ACTION INPUT IS USEFUL

(CAUSE) WHEN I WHEN I

WHEN

(CAUSE)

WHEN THE ROBOT HAS NOT RECOGNIZED THE HUMAN BEING AND THE HUNGER AND THE DESIRE FOR LOVE ARE NOT REMOVED.

SURPRISE: AN EMOTIONAL ACTION TO CONDUCT AN EMERGENCY PROCESSING BY STOPPING THE CURRENT ACTION.

(CAUSE)
-WHEN THE ROBOT RECEIVES INFORMATION FROM THE USER AFTER NO INPUT HAS BEEN RECEIVED.
-WHEN THE SURROUNDING SOUND IS ENTERED.

DISGUST: AN EMOTIONAL ACTION TO SHUT DOWN THE COMMUNICATION WITH OUTSIDE WHEN THE ROBOT FEELS DANGER OF ITS LIFE, AND TO ESCAPE FROM SOMETHING THAT IS NOT FAVORABLE TO THE ROBOT.

FEAR: AN EMOTIONAL ACTION TO SHUT DOWN THE COMMUNICATION WITH THE OUTSIDE WHEN THE ROBOT IS IN DANGER AND/OR TO ESCAPE FROM SOMETHING WRONG.

IT RECOGNIZES A CLIFF.
IT FALLS DOWN AND CANNOT RECOVER FROM IT.

N. HEIN

(CAUSE)

(CAUSE)
WHEN THE ROBOT RECOGNIZES THE COLOR DISLIKE.
WHEN THE DISGUST TOWARD THE HUMAN BEING
BECOMES VERY HOT.

ANGER: AN EMOTIONAL ACTION THAT OCCURS WHEN THE INFORMATION ENTERED IS NOT FAVORABLE. OR THE ROBOT IS EXPECTING THE INFORMATION THAT HAS NOT BEEN ENTERED AND WHEN THE ROBOT HAS HOSTILITY TOWARD THE OUTSIDE. WHEN ITS HUNGER AND/OR DESIRE FOR LOVE ARE NOT REMOVED AFTER RECOGNIZING THE HUMAN BEING. WHEN THE DESIRE FOR EXERCISE BECOMES VERY HIGH AFTER IT HAS BEEN IN A STATE NOT BEING PUT DOWN FROM THE STATION. WHEN THE INFORMATION OTHER THAN THE HEAD TOUCH SENSOR ENTERS DURING THE SPECIFIED ACTION. II IS HIT (CAUSE)

F1G. 6





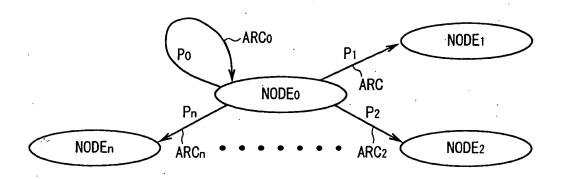


FIG. 7

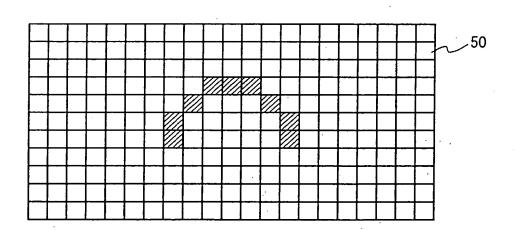


FIG. 9

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R NODE	L	node 600	ACTION 4	-			20%						
TRANSITION PROBABILITY TO OTHER NODE	\Box					L				سِا	<u> </u>		l
	0									\square		· _	ľ
	0	node 1000	ACTION 3			20%							
SITION PROB	8	node120	ACTION 1 ACTION 2 ACTION 3		40%								
TRAN	A	node 120	ACT 1 ON 1	30%								-	
RANGE OF DATA				0001 0		•		0, 100	50, 100	50, 100	50, 100		
NAME OF DATA				SIZE			,	DISTANCE	JOY	SUPRISE	SADNESS		
NAME OF INPUT EVENT				BALL	PAT	HIT	SOUND	OBSTACLE					
	node 100		-		2	3	4	2	9	7	8		

16.8

EXPLANATION OF REFERENCE NUMERALS

1 - PET ROBOT, 4 - HEAD UNIT, 4A - SEMI-TRANSPARENT COVER, 10 - CONTROLLER, 10A - TOUCH SENSOR, 15 - CCD CAMERA, 16 - MICROPHONE, 17 - TOUCH SENSOR, $19R_1$, $19R_2$ - RED LED, $19G_1$, $19G_2$ - GREEN LED, $21_1 \sim 21_N$ - ACTUATOR, 30 - CONDITION RECOGNITION UNIT, 31 - EMOTION/INSTINCT MODEL UNIT, 32 - FACTION DETERMINING UNIT, 33 - ACTION FORMING UNIT, 40 - CONDITION TRANSITION TABLE, S3 - AUDIO SIGNAL, S4 - LED DRIVING SIGNAL, S10 - CONDITION RECOGNITION INFORMATION, S11 - ACTION DETERMINING INFORMATION, S12 - DRIVING SIGNAL